2001

Crop Watch No. 2001-10, May 18, 2001

Lisa Brown Jasa
University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2001-10
May 18, 2001

Expect to see relatively high numbers

Bean leaf beetles moving into fields

Cold winters are a major mortality factor for many insects, including the bean leaf beetle. So, did the cold temperatures we had this winter kill enough beetles so they won't be a problem this spring? Well, probably not. The prolonged snow cover probably insulated overwintering beetles from some of the extreme temperatures, and because we had such high populations last year, we expect to see relatively high numbers of beetles this spring. In fact, farmers are beginning to notice beetles as they plant and early-planted soybean fields are currently being colonized by over-wintered beetles.

Bean leaf beetles have two generations a year in Nebraska; however, since they over-winter as adults, three periods of beetle activity are seen in the growing season: overwintering colonizers, F1 generation (offspring of the colonizers, the true first generation) and the F2 generation.

Bean leaf beetles over-winter as adults in protected sites such as grassy field edges, leaf litter, and crop residue. They become active fairly early in the year and often can

(Continued on page 90)

Bean leaf beetle

Inside

Field updates 88
West Central open house 88
Glyphosates compared 90
New herbicides; label changes 92
Alfalfa weevil activity 92
Precipitation update 93
Diagnostic Clinic 94
Tips for sampling 94

Get a grip on postemergent weed control in corn

With good growing conditions many producers should begin looking at their postemergence weed management options.

There are several factors to consider when choosing a postemergence herbicide. The first is the efficacy it will have on the weed species present. Obviously some herbicides provide better control on some weeds than on others. Choose a herbicide that will provide the control you desire. Second, consider crop safety and application timing of the herbicide. For example, Basis Gold will have good activity on many grass and broadleaf weeds but it should not be applied to corn over 12 inches. All herbicides carry some type of timing restriction and pushing those limits can easily result in crop injury or reduced weed control.

Often, efficacy is influenced by the rate used. Choose a herbicide that will allow you to use the required rate for different weed sizes. For example, 24 oz/a of Roundup Ultra will do well on most velvetleaf plants in the 1–3 inch stage; however, if you are dealing with 4- to 8-inch weeds, you will need to increase that rate to 1 qt/a. Caution should be used when increasing most herbicide rates because this can increase the possibility of crop injury.

See page 89 for table of herbicides.

Finally, follow label recommendations where additives are concerned. Many labels will suggest adding crop oil or AMS to enhance herbicide uptake or movement into the plant cell. Most postemergence herbicides will call for an additive of some sort to enhance activity. As always, read and follow label recommendations and restrictions for maximum herbicide efficacy and crop safety.

Brady Kappler
Weed Science Educator

Field updates

Nebraska Agricultural Statistics Service: Winter wheat rated 2% very poor, 9% poor, 31% fair, 51% good, and 7% excellent. Lower condition ratings were noted in the Panhandle and southeast Nebraska. Comments from the southern Panhandle indicated fields were either good or poor, with some fields having been adjusted and released by crop insurance. Sixty percent of the crop had jointed, compared to 86% last year and 64% for the five-year average.

West Central REC Open House June 8

The University of Nebraska West Central Research and Extension Center will be hosting an open house Friday, June 8, from 1 to 4 p.m. It will be held in conjunction with NebraskalandDays June 8-19.

"West Central REC has strong ties with the North Platte community and west central Nebraska dating back almost 100 years. We thought the open house would be a great way to highlight our research and extension activities for the public," said Gary Hergert, REC director.

Displays and field plots will showcase more than 25 species of penstemonculture and winter wheat variety tests. West Central's horticulture staff and Lincoln County Master Gardeners will be available to answer questions. The North Platte Veterinary Diagnostic Lab and the Nebraska Plains Higher Education Center will showcase their activities and services. In addition, exhibits will feature soils, entomology, animal science, weed science, range and forage, irrigation and forestry departments from West Central.

For more information contact T.L. Meyer, communications associate at the West Central REC, at (308) 532-3611, Ext. 150.

As of Monday, 30% of the state's corn crop had emerged.

Corn planting moved ahead to 76%, with the largest gains in the western two-thirds of the state. This continued well behind the 92% pace of last year but was near the 77% average. Thirty percent had emerged, compared with 53% last year and 24% average.

Soybeans planting moved ahead to 18% complete, behind 54% last year and 23% average. Five percent of the crop had emerged, compared to 14% last year and 4% average. Sorghum planting made limited progress with 6% planted as of Sunday. A year ago, 19% had been planted and 11% is the average.

CROP WATCH

cropwatch.unl.edu

Crop Watch is published from March to November by the University of Nebraska Institute of Agriculture and Natural Resources Communications and Information Technology, PO Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order either a printed or electronic (web) subscription or to change your address, write to ***Crop Watch*** at the above address or call (402) 472-7981. The newsletter also is available on the web at **cropwatch.unl.edu**

Lisa Jasa, Editor

For more information about a particular subject, write the authors at the addresses below:

UNL Department of Entomology
202 Plant Industry Bldg.
Lincoln, NE 68583-0816

UNL Department of Agronomy
279 Plant Science Bldg.
Lincoln, NE 68583-0918

UNL Department of Plant Pathology
406 Plant Science Bldg.
Lincoln, NE 68583-0722

UNL Department of Agricultural Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728

Postemergence herbicides for corn

Herbicide	Action	Timing	Rate/A	Additive
Atrazine	Broadleaf + grass	Corn < 12", broadleaves 2-6", grass < 1"	1.4-2.2 lb	COC 1qt
Accent	Broadleaf + grass	Corn up to 20", broadleaves < 4", grass < 3"	0.67 oz	COC 1gal/100 **
Accent Gold	Broadleaf + grass	Up to V6, weeds 1-3"	2.9 oz	COC 1 gal/100 gal, 28%N 1-2 qt
Aim	Broadleaf	2 leaf to 48"	1.5 oz	NIS 1 qt/100 gal, COC 1 gal/100 gal, or 28% 2-4 qt/a
Banvel	Broadleaf	Corn spike to 5"*	0.5-1.0 pt	Not common **
Basis	Broadleaf + grass	Corn spike to 2-collar, 4-leaf	0.33 oz	COC 1-2 gal/100+ UAN 1-2qt/100 **
Basis Gold	Broadleaf + grass	Up to V6, weeds 1-3"	14 oz	COC 1-2 gal/100 **
Beacon	Broadleaf + shattercane	Corn 4-20", broadleaves < 4", grass < 3"	0.38-0.76 oz	COC 1 qt**
Bunctril	Broadleaf	Corn 2-leaf to V6, broadleaves 2-6"	1.0-1.5 pt	
Celebrity	Broadleaf + grass	Corn 4-36" ****	6.67 oz	NIS 1-2 qt/100 gal + UAN 2-4 qt/a **
Celebrity Plus	Broadleaf + grass	Corn 4-24" ****	4.7 oz/a	NIS 0.25-0.5% + UAN 1-2 at/a **
Clarity	Broadleaf	Corn 8-24" *	0.5-1.0 pt	Not common **
Contour ***	Broadleaf + grass	Corn V6, weeds to 3"	1.33 pt	COC 1.5-2 pt + UAN 1-2 qt **
Connect	Broadleaf	Corn after emergence and prior to tassel	1.25-1.87 lb/a	COC 1% v/v
Distinct	Broadleaf + some grass	Corn 4-24" *	4-6 oz	NIS 1 qt/100gal + UAN 5 qt/100 gal**
Dual II	Broadleaf + grass	Layby	1.5-3 pt	
Exceed	Broadleaf	Corn 4-20", broadleaves 2-12"	1.0 oz	COC 1 qt **
Extrazine II DF	Broadleaf + Some grass	Corn before 5-leaf, grass 1" or less	1.8-2.2 lb	NIS 1 qt **
Hornet	Broadleaf	Corn spike to 20", broadleaves <8"	1.6-4.0 oz	NIS 1qt/100gal COC 1gal/100gal
Hornet WDG	Broadleaf	Corn spike to 20", broadleaves , 8"	2.0 –5.0 oz	NIS 1qt/100gal COC 1gal/100gal
Laddok S-12	Broadleaf	Corn < 12", broadleaves 2-4"	1.3-2.3 pt	COC 1 qt **
Liberty ***	Broadleaf + grass	Weeds 1-4"	24-28 oz	AMS 3 lb
Liberty ATZ ***	Broadleaf + grass	Corn < 12"	40 oz	AMS 3 lb
Lightning ***	Broadleaf + grass	Corn to 12", weeds up to 4"	1.28 oz	NIS 1qt + UAN 1-2 qt
Marksman	Broadleaf	Corn before 5- leaf stage	2.0-3.5 pt	COC 1 qt **
Northstar	Broadleaf + some grass	Corn 4-20" *	5 oz	NIS 1 qt/100 gal **
Permit	Broadleaf	Corn spike to 20", broadleaves 2-6"	0.66-1.33 oz	COC 1 gal/100 **
Poast	Grass	Grass < 8"	1.0 pt	COC 1 qt **
Prowl	Some broadleaf + grass unemerged	Corn spike to layby,	1.8-3.6 pt	
Pursuit	Broadleaf + grass	Weeds < 4"	4 oz	COC 1.5-2 pt + UAN 1-2 qt **

* Corn over 8", use drop tips
** Other additives may be used, check label
*** Requires herbicide-resistant corn hybrid
**** Corn over 20", use drop nozzles

Postemergence herbicides for corn *(Continued from page 89)*

Herbicide	Action	Timing	Rate/A	Additive
Resource	Broadleaf	Corn 2-10 leaf, broadleaves < 4"	4-6 oz	COC 1 qt **
Roundup Ultra ***	Broadleaf + grass	Corn up to 24"	24-42 oz	8.5 -17 lbs AMS/100gal
Roundup Ultramax ***	Broadleaf + grass	Corn up to 24"	20-40 oz	8.5 -17lbs AMS/ 100gal
Sencor	Broadleaf	Corn up to 8", broadleaves 2-4"	1.5-2 oz	28%N 2-4 qt
Spirit	Broadleaf + some grass	Corn 4-20"	1 oz	NIS 1-2 qt/100 + 28% N .5-1 gal
Steadfast	Broadleaf + grass	Corn up to 12" or < 6 collar	.75 oz	COC 1 gal/100 gal, 28% N 2 qt
Treflan	Grass	Corn 2-leaf to layby, weeds unemerged	1.5-2.0 pt	
2,4-D Amine	Broadleaf	When corn is small *	1-2 pt	

* Corn over 8", use drop tips
** Other additives may be used, check label
*** Requires herbicide-resistant corn hybrid
**** Corn over 20", use drop nozzles

Know your product

The many faces of glyphosate

These days it seems that many herbicides are changing names or formulation or manufacturers. This makes it difficult for everyone keep up with just what is what. Lately new glyphosate products have led the pack with new names and distributors.

Below is a table listing *many* of the new glyphosate products available and registered for use in Nebraska on Roundup Ready corn and soybeans . The table lists the product's name, distributor, formulation, acid equivalent, and whether surfactants are required, may be added, or are not needed. This is not an all inclusive list, but a representative table of available products. Remember that glyphosate herbicides respond positively to the addition of AMS, especially in hard water.

Brady Kappler
Extension Weed Science Educator

Distributor	*Product*	*AI Form.*	*Acid Equiv. lb/gal*	*Non-Ionic Surfactant lb/gal*
Agrilliance	Cornerstone	4	3	May be added
Agrilliance	Silhouette	4	3	May be added
Albaugh	Gly Star	4	3	May be added
Albaugh	Gly Star Plus	4	3	Not Required
Cheminova	Glyfos Xtra	4	3	Not Required
Dow	Glyphomax	4	3	May be added
Dow	Glyphomax Plus	4	3	Not Required
Griffin	Glyphosate Original*	4	3	May be added
Microflo	GlyFlo*	4	3	May be added
Monsanto	Roundup Original	4	3	May be added
Monsanto	Roundup Ultra	4	3	Not required
Monsanto	Roundup UltraMax	5	3.75	Not required
NuFarm	Credit*	4	3	May be added
NuFarm	Debit TMF*	4	3	Required
Syngenta	Touchdown Pro w/ IQ	3.75	3	May be added

* Not registered for use on Roundup Ready corn

Bean leaf beetles *(Continued from page 87)*

be found in alfalfa prior to soybean emergence. As soybeans emerge, the beetles quickly move to the seedling plants, feeding on cotyledons and expanding leaf tissue. These overwintered beetles, called colonizers, mate and begin laying eggs. Females live about forty days and lay from 125 to 250 eggs. After egg-laying is complete the colonizing population dwindles as the beetles die. A new generation of beetles (F1) will begin to emerge in late June to early July. The F1 beetles mate and produce a second generation of beetles (F2) that begin to emerge in mid August and feed on leaf and pod tissues. The pod-feeding F2 beetles are most likely to cause economic damage.

Bean leaf beetles vary in color, but are usually reddish to yellowish-tan. They are about 1/4-inch long and commonly have two black spots and a black border on the outside of each wing cover. These spots may be missing, but in all cases there is a small black triangle at the base of the wings near the thorax.

Because they move to soybean fields so soon after seedling emergence, early-planted fields will usually have more beetles and suffer the most injury. This has become more of a problem in recent years because planting dates seem to be getting earlier each year. Although the defoliation caused by the beetles can appear to be quite severe, research in Nebraska and elsewhere has shown that it usually does not result in economic damage. Soybean plants have the capacity to compensate for a large amount of early tissue loss, so it takes a considerable amount of beetle feeding to impact yield. Generally, unless insect populations are large enough to cause more than 50% to 60% defoliation, it is unlikely that treatment would be economically justified. This point is illustrated by the economic thresholds for bean leaf beetle on seedling soybean given in *Tables 1 and 2*. For example, if the value of soybeans is $5/bushel and the management costs are $6/acre, it takes three beetles **per soybean seedling** (stage VC) before treatment is justified. It is rare to see beetle numbers this high. Be aware that these thresholds are for defoliation of beans at VC - V1. If beetles enter the field right at or during seedling emergence, the thresholds will likely be lower because the beetles do not have leaf tissue to eat and will feed on the growing point, stem, and cotyledons. We do not have a good research base for bean leaf beetle injury to newly emerging soybean, but the thresholds are probably about 1.5 beetles lower than the VC thresholds.

Table 1. VC Economic thresholds (beetles per plant)

Crop value, $/bu	Pest management cost, $/acre			
	$6	*$8*	*$10*	*$12*
$5	3	4	4	6
$6	2	3	4	5
$7	2	3	3	5
$8	2	2	3	4

Table 2. V1 Economic thresholds (beetles per plant)

Crop value $/bu	Pest management cost, $/acre			
	$6	*$8*	*$10*	*$12*
$5	4	5	7	8
$6	3	4	6	7
$7	3	4	5	6
$8	3	3	4	5

Remember that early-planted soybeans are the most susceptible. If economic thresholds are reached, many insecticides are available for bean leaf beetle control. All will do an adequate job if applied according to label directions.

Another reason some producers treat bean leaf beetle on seedling soybeans is to reduce the pod damaging F2 generation that emerges in August. UNL Extension does not recommend this practice. There are many environmental factors that can impact beetle populations throughout the growing season, making it impractical to use spring beetle numbers to accurately predict if beetle populations will reach economically damaging levels in August.

Regular scouting and use of the appropriate economic thresholds are the best ways to manage late season bean leaf beetle in soybean. Recent findings by Wai-ki (Frankie) Lam and Larry Pedigo of the Iowa State University Department of Entomology, are providing additional late-season bean leaf beetle management tools for soybean producers. Although the researchers found that there is not a tight correlation between spring colonizing beetles and the F2 population, they found the F1 and F2 populations are highly correlated. They are developing economic thresholds for late season damage based on F1 beetle counts. If F1 beetle numbers reach an economic threshold, the producer can schedule to treat the F2 generation. This will allow some flexibility for the producer. We will provide information on F1 and F2 bean leaf beetle sampling and thresholds later this summer.

Tom Hunt, Extension Entomologist, NEREC, Haskell Ag Lab, Concord
Keith Jarvi, Extension Assistant Integrated Pest Management, NEREC, Norfolk

New herbicide registrations and label changes

Several new herbicides have received registrations and labels have been changed for several other products, as described in the following:

Valor

Valor is a new pre-emergence and pre-plant burn-down compound from Valent for small-seeded broadleaf control in soybeans without significant rotational concerns. Product availability will be limited in 2001; however, a small amount will be sold in Nebraska, Minnesota, and South Dakota. The product also will be available for demonstration sites in those states.

Harmony GT

The EPA has approved a Harmony GT supplemental label for corn and soybeans. The "GT Burndown" label allows burndown/pre-emergence applications in fields to be planted to corn or soybeans

Liberty and Liberty ATZ

The EPA recently approved label revisions for Liberty and Liberty ATZ herbicides. Two important changes were:

1) the removal of the lowest use rate for weed control in corn from the Liberty and Liberty ATZ label recommendations; and

2) the statement, "Do not add surfactants..." was removed.

The specific changes approved for each herbicide label are listed below.

Liberty ATZ

The lowest recommended use rate is now 40 fluid ounces/acre (2.5 pints/acre). Restrictions were revised by removing "Do not add any surfactants or crop oils". Under the spray additives section, the statement, "Do not add any surfactants or crop oils," was removed and the statement "Liberty ATZ Herbicide is formulated to provide optimum herbicidal performance. Use of additional surfactants or crop oils will not enhance weed control" was added. The cultivation statement was replaced with: "To maximize weed control, no cultivation should occur in the period from five days before . . ."

Liberty

The statement "Do not add any surfactants or crop oils" was removed from restrictions. Under spray additives the statement "Do not add any surfactants or crop oils" was removed and "Liberty Herbicide is formulated to provide optimum herbicidal performance. Use of additional surfactants or crop oils will not enhance weed control" was added. The lowest recommended use rate for weeds in corn/soybeans is now 24 fl. oz./acre. Also, the section for "Sequential Applications with Liberty Herbicide" (allowed 20 fl. oz./acre followed by a second treatment of 20 fl. oz./acre) was removed. The cultivation statement [was replaced] with the following: "To maximize weed control, no cultivation should occur between the period from five days before an application to five days after an application of Liberty Herbicide." Removed the statement "Position drop nozzles over the row centers". Changed rate from "16 to 34 fluid ounces" to "24 to 34 fluid ounces".

Spartan

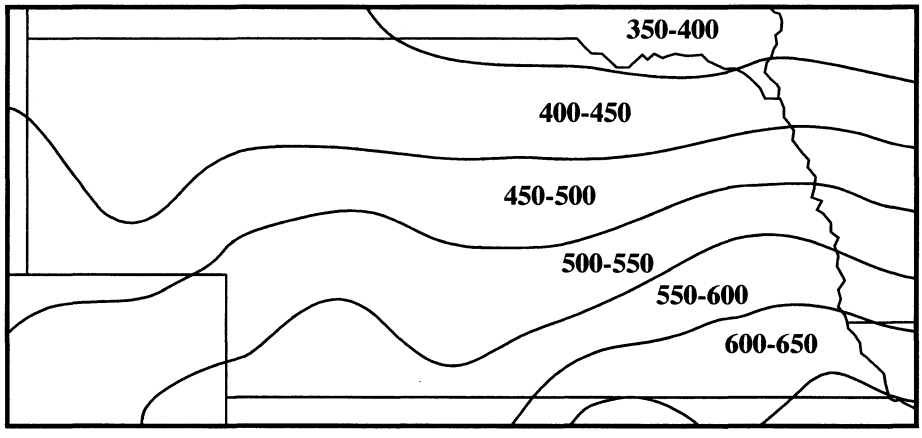
Spartan has once again received a Section 18 label for sunflowers in Nebraska. This label allows for application rates ranging from 2 to 5.33 oz, depending on soil type. Spartan provides good control of kochia as well as pigweed and nightshade. It does have burndown activity and can be applied from 30 days before planting to three days after planting.

Brady Kappler
Extension Educator – Weed Science

Alfalfa weevil activity

Alfalfa weevil activity seems to be light, at least in southern and eastern Nebraska. Early reports of alfalfa weevil seem to have been isolated incidents. Alfalfa is in the the bud stage and beyond in southern Nebraska and progressing rapidly in the north. If weevils are near or above threshold levels, it is probably better to take an early cutting rather than use an insecticide.

Keith Jarvi, Extension Assistant
Integrated Pest Management,
NEREC, Norfolk



This map shows accumulated growing degree days, base 48, as of May 13. Alfalfa weevil larvae usually begin causing noticeable damage between 300 and 350 GDD. Scouting should be underway in all alfalfa fields.

Deep soil moisture recharging well; recent rains eliminate precipitation deficits dating back a year

Abundant precipitation has fallen across the entire state of Nebraska during the last six weeks. So much rain has fallen that precipitation deficits from last year's drought have been eliminated. All climate districts within the state are showing a surplus for the last six weeks, year to date, September to date, and one year records.

Soil moisture reserves have shown a positive response to the abundant moisture. All active soil moisture monitoring sites within the High Plains Regional Climate Center Automated Weather Data Network indicate deep soil moisture recharge. During the last 14 days, we have seen an increase in stored moisture at 100 cm.

The latest storm event May 3-6 dropped three to seven inches of rainfall across eastern Nebraska, with one- to three-inch totals common across western Nebraska. Even with the heavy rainfall, flooding reports were minimal. The most significant flooding occurred on the Missouri and Platte rivers. The minimal amount of flooding reported with such a heavy precipitation event indicates that more rainfall was captured by soils than ran off into streams.

What has become apparent with the recent stretch of inclement weather is that we are experiencing a significant increase in severe weather. We have seen temperatures swing from much above normal to much below normal over short times. The conflict between air masses has resulted in favorable precipitation.

For the time being, it doesn't appear that the pattern will change. Nebraskans should expect roller coaster weather with periods of three to five days of above normal temperatures followed by five to seven days of below normal temperatures. Interspersed between these temperature swings will be the chance for thunderstorm activity and associated heavy rain.

Hopefully, planting delays will be minimal. There has been enough time between precipitation events that soils have been able to dry out adequately to allow for normal tillage and planting operations. Above normal temperatures have aided the drying process and helped minimize cool soil temperatures which may develop after significant precipitation events.

We have been fortunate compared to Iowa, Minnesota, and Wisconsin where substantial precipitation has resulted in significant planting delays. In southern Illinois, Indiana, and Ohio abnormally dry conditions have resulted in poor corn emergence and virtually halted soybean planting.

It really is too early to tell, but perhaps the eastern Corn Belt is going to experience problems similar to those which occurred in the western Corn Belt last year.

Al Dutcher
State Agricultural Meteorologist

What a change from 2000 to 2001 precipitation levels

Precipitation summary in inches: actual and percent of normal (100%=Normal)

	May 9-May 15		*Apr 1-May 15*		*Jan 1-May 15*		*Sep 1-May 15*	
	Actual	*%*	*Actual*	*%*	*Actual*	*%*	*Actual*	*%*
Ainsworth	.20"	26	7.32"	199	9.31"	155	14.25"	130
Alliance	.15"	20	3.71"	116	5.59"	120	9.53"	125
Beatrice	.38"	42	8.22"	176	14.19"	170	19.37"	113
Elgin	.00"	0	8.26"	210	11.64"	172	17.81"	145
Grand Island	.23"	27	7.76"	183	11.07"	153	16.72"	127
Hartington	.00"	0	7.32"	187	9.71"	141	17.11"	133
Holdrege	.14"	15	5.91"	147	9.30"	137	14.40"	116
Imperial	.00"	0	4.47"	136	6.32"	119	13.05"	148
Lincoln	.37"	44	7.36"	163	11.39"	146	16.25"	105
Madison	.00"	0	9.56"	229	11.83"	166	18.54"	143
McCook	.19"	25	5.00"	142	8.17"	142	16.94"	172
Nebraska City	.53"	58	5.88"	114	12.33"	134	19.81"	107
North Platte	.17"	22	8.26"	231	9.74"	176	14.77"	160
Ord	.00"	0	9.95"	265	13.04"	208	19.19"	164
Red Cloud	.70"	76	7.91"	192	11.79"	167	17.71"	132
Scottsbluff	.00"	0	5.18"	181	6.23"	128	11.47"	144
Sidney	.00"	0	3.90"	109	4.98"	88	8.15"	92

Using the NU Plant and Pest Diagnostic Clinic

Qualilty samples help improve diagnoses

If you have plant or insect problems, remember that the NU Cooperative Extension Plant and Pest Diagnostic Clinic offers a variety of services. These include identification of plant diseases, insects, horticultural plants, weeds and herbicide injury. The charge for services is the same as last year: — $10 for a standard sample. This includes all samples that can be diagnosed with only visual and/or microscopic examination. Culturing for pathogen identification costs an additional $10. This fee helps cover the cost of media and the time to identify the causal agent.

Additional charges may include:

SCN assay - $10
Plant parasitic nematode assay - $15
Goss's culture - $10
Stewart's Elisa - $15
Misc. Elisa test - $15
Bacterial ID - Biolog System - $20
Virus screen (Protein-based)- $15
Rare species ID - $10
Insect culture - $10

Follow the tips, at right, for collecting and sending samples to the Plant and Pest Diagnostic Clinic to ensure samples arrive in good condition for an accurate diagnosis.

When you have a plant or pest problem, first consult with your local Cooperative Extension educator who can often help with a diagnosis. They also have copies of the specimen identification form used when submitting samples to the Clinic. The forms and samples should be sent to:

University of Nebraska-Lincoln
Plant and Pest Diagnostic Clinic
448 Plant Sciences
P.O. Box 830722
Lincoln, NE 68583-0722

We look forward to serving you and hope your plant and insect problems are minimal and your harvest plentiful.

Jennifer Chaky, Coordinator, Plant and Pest Diagnostic Clinic

Tips for collecting a sample

- Collect a sample representative of symptoms and also one of healthy tissue for comparison. For turf samples, it is often helpful to send a sample that includes a margin between healthy and diseased areas.
- Send as much of the sample as possible. This means send the entire plant including the root ball if feasible. Also send multiple plants or multiple branches from a tree or shrub showing a range from healthy to unhealthy conditions to aid with identification.
- Provide as much information about the sample as possible (age and variety of plant, moisture availability, soil type, disease history of site, chemical history of site, description of symptoms, plant part(s) affected, time of symptom development, distribution of symptoms, occurrence of severe weather, and any other information that may be helpful in diagnosing the problem).
- Include a picture of the distribution of symptoms.
- Plants submitted for horticultural and weed identification should include flowers and/or fruit, leaves and roots.

Tips for sending

. . . a plant sample

- Keep samples cool before sending them to the Clinic.
- Place the sample in a plastic bag and include a dry towel if the sample is damp. If the roots are in soil, enclose them in a separate plastic bag with the soil intact. Place the sample into a sturdy box with packing material to take up excess space. A padded envelope can be used for relatively small and flat samples, such as some tree branches.
- Do not mail samples late in the week, as the sample can deteriorate if the package sits in the post office over the weekend.
- Include all sample information (see above), photographs if possible, and contact information such as phone numbers and mailing address.

. . . an insect sample

- Send insect specimens in a rigid container.
- Soft-bodied insects, such as insect larvae and small insects should be placed into a tight sealing bottle with a liquid preservative such as alcohol or vinegar. Rubbing alcohol works well because it is 70% alcohol.
- Hard-bodied insects, such as beetles, ants and flies should be wrapped in tissue and placed in a crush proof container.
- For living insects, place the host plant or damaged material along with some loose tissue into a ventilated container.

Jennifer Chaky, Coordinator
Plant and Pest Diagnostic Clinic